CLAIMS

1 A method for the diagnosis and therapy of chronic heart failure comprising continuous monitoring of the patient and continuous determination of significant decompensation parameters during a sample period of normal patient life, recording the data determined, continuously monitoring these data during therapy, comparing the memorized data with those determined during the same time span of the sample period and comparing the duration of periods in which decompensation is present with the total duration of those periods during which decompensation is absent or conforms to that determined during the sample period.

2 A method as claimed in claim 1 characterized in that the continuous monitoring of the patient and continuous determination of significant decompensation parameters are made when the patient's heart rate is produced by electrical pacing.

3. A method as claimed in claim 1, characterised in that while monitoring during therapy, all abnormal events are recorded, as well as the parameters determined in the immediately preceding period.

4. A method as claimed in claim 3, characterised in that should the parameters determined in the immediately preceding period reappear, an abnormality situation is indicated.

5. A method as claimed in claim 1, characterised in that the memorized parameters are the heart rate, the ventricular contractile force, and the curve of force variation as a function of heart rate.

6. A method as claimed in claim 5, characterised in that the memorized parameters are the heart rate, the ventricular contractile force, and the curve of force variation as a function of heart rate at determined moments of the sample period.

7. A method as claimed in claim 5, characterised by memorizing the force-frequency curve variations at least during a period equal to the sample period.

8. A method as claimed in claim 5, characterised in that the force data are derived from the intracardiac pressure curves.

9. A method as claimed in claim 5, characterised in that the force data are derived from the peripheral pressure curves.

10. A method as claimed in claim 5, characterised in that the force data are derived from the ventricular volumes.

11. A method as claimed in claim 5, characterised in that the force data are derived from the pressure/volume relationship.

12. A method as claimed in claim 5, characterised in that the force data are derived from cardiac tone (force of contraction and/or rate of tension development).

13. A method as claimed in claim 5, characterised in that the force data are derived via impedance.

14. A method as claimed in claim 5, characterised in that the force data are derived from Doppler flow measurement.

15. A method as claimed in claim 5, characterised in that the force data are derived with echo-Doppler.

16. A method as claimed in claim 5, characterised in that the force data are derived from a combination of all or part of the following parameters: the intracardiac pressure curves, the peripheral pressure curves, the ventricular volumes, the pressure/volume relationship, the cardiac tone, the impedance, the Doppler flow measurement, the echo-Doppler measurement.

17. A method as claimed in claim 5, characterised in that the ventricular force is expressed as dP/dt/EDV, which indicates the maximal rate of left ventricular pressure development divided by end-diastolic volume (EDV).

18. A method as claimed in claim 5, characterised in that the ventricular force is expressed as sP/ESV, which indicates the left ventricular end-systolic pressure volume ratio (end-systolic ventricular pressure divided by the end-systolic volume).

19. A diagnostic apparatus characterised by comprising at least one sensor which emits a signal proportional to the ventricular force and an ECG sensor arranged to measure cardiac electrical activity, both emitting electrical signals indicative of cardiac activity; an analog/digital converter to convert the sensor signals into digital data; an electronic processor programmed to process the determined data and to trace a force-frequency curve; a memory for storing the digital data in an ordered manner; and a comparator for comparing ordered successions of digital data stored in the memory with ordered successions of instantaneously determined digital data.

20. An apparatus as claimed in claim 19, characterised in that the sensor which emits signals proportional to pressure is intracardiac.

21. An apparatus as claimed in claim 19, characterised in that the sensor which emits signals proportional to pressure is external.

22. An apparatus as claimed in claim 19, characterised by comprising a ventricular volume sensor.

23. An apparatus as claimed in claim 19, characterised in that the sensor which emits signals proportional to the pressure/volume relationship is a combination of a pressure sensor and a volume sensor.

24. An apparatus as claimed in claim 19, characterised by comprising an internal or external sensor for determining the force of contraction and/or the rate of tension development (cardial tone and/or calcium transient).

25. An apparatus as claimed in claim 19, characterised by comprising a sensor for determining impedance.

26. An apparatus as claimed in claim 19, characterised by comprising a Doppler sensor consisting of one or more piezoelectric crystals which determine one or more of the following parameters:

- cardiac output
- stoke volume
- diastolic mitral flow measurement and systolic mitral regurgitation flow measurement
- mitral regurgitation curve and dP/dt derivative
- E wave deceleration time
- mitral A wave duration and duration of pulmonary venous regurgitation AR wave during atrial contraction, to establish relative A wave and AR wave duration.

27. An apparatus as claimed in claim 19, characterised by comprising an implanted or external sensor consisting of one or more piezoelectric crystals which determine the dimensions of the cardiac chambers during the cardiac cycle.

28. An apparatus as claimed in claim 19, characterised by comprising an echo-Doppler sensor consisting of one or more piezoelectric crystals for the combined determination of the intracardiac flow signals and the dimensions of the cardiac chambers.

29. An apparatus as claimed in claim 19, characterised in that the ECG sensor is internal.

30. An apparatus as claimed in claim 19, characterised in that the ECG sensor is subcutaneous.

31. An apparatus as claimed in claim 19, characterised in that the ECG sensor is external.